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## P 28. Nematoxic effect of essential oils and their fractions against the pinewood nematode, *Bursaphelenchus xylophilus*

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The pinewood nematode (PWN) *Bursaphelenchus xylophilus* is a highly pathogenic plant parasite that greatly affects pine forests. In Portugal, the most affected species is *Pinus pinaster* Aiton. Despite great efforts, since its fist detection in 1999, the PWN has spread through the country, including Madeira Island, having been recently detected in Spain [1,2]. Containing this pest is of the utmost importance for European pine forest safeguard.

Since most synthetic chemicals used to control phytoparasites are toxic to humans and animals, and can accumulate in the soil and in food plants [3], in the present work, the nematoxic potential of over 80 essential oils (EOs), isolated from the Portuguese flora, were assessed against the PWN. EOs were isolated by hydrodistillation and analysed by GC and GC-MS [3]. EOs hydrocarbon and oxygen-containing fractions were obtained as in [4]. Direct-contact assays, adapted from [3], were performed by adding EOs/methanol stock-solutions to 50-100 mixed-stage PWN suspensions. After 24h in darkness, dead and live nematodes were counted under an inverted microscope. Assays were repeated at least 10 times in two series.

Mortalities ≥96% were obtained with 2µL/mL of the EOs isolated from *Cymbopogon citratus*, *Eucalyptus citriodora*, *Mentha arvensis*, *Origanum virens*, *Origanum vulgare*, *Ruta graveolens*, *Satureja montana*, *Syzygium aromaticum*, *Thymbra capitata*, *Thymus caespititius* (carvacrol and/or thymol-rich), *Thymus vulgaris* and *Thymus zygis*. These EOs were further tested at 1, 0.5 and 0.25µL/mL. Minimum lethal concentrations (LC100) <0.4µL/mL, were obtained for the 2-undecanone-rich *R. graveolens* EO and the carvacrol and γ-terpinene-rich *S. montana* and *T. capitata* EOs. Assays with EO fractions revealed that the monoterpene-rich nematoxic EOs control PWN through their combined hydrocarbon and oxygen-containing fractions through additive and/or synergic relations.

As complex mixtures of active components, EOs may prove to be effective nematoxic agents.

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